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ABSTRACT

This research review focuses on the effects and implications of text organization, both physical presentation and text structure, and on reading comprehension, with special emphasis on the comprehension of diverse learners. The review includes students in kindergarten through college, who are high and low readers and comprehenders; low performers/achievers; remedial readers; normal achievers and general education students; and students who have learning disabilities (LD), dyslexia, behavior disorders, and mild mental retardation. The research indicates that reading comprehension is enhanced by text organization, students' awareness of text organization, students' strategic use of text organization, and explicit instruction in the physical text presentation and/or text structure. Text organization includes the visual, physical organization (e.g., heading, location of main idea) as well as less visible text structures (e.g., narrative and sequence). Attention is directed to implications for learning of well-presented text, and instruction in and student strategic use of text structure. A chart of research studies reviewed identifies study author(s) and year, number and type of study participants, the type of text organization, and the study purpose. (Contains 22 references.) (SW)

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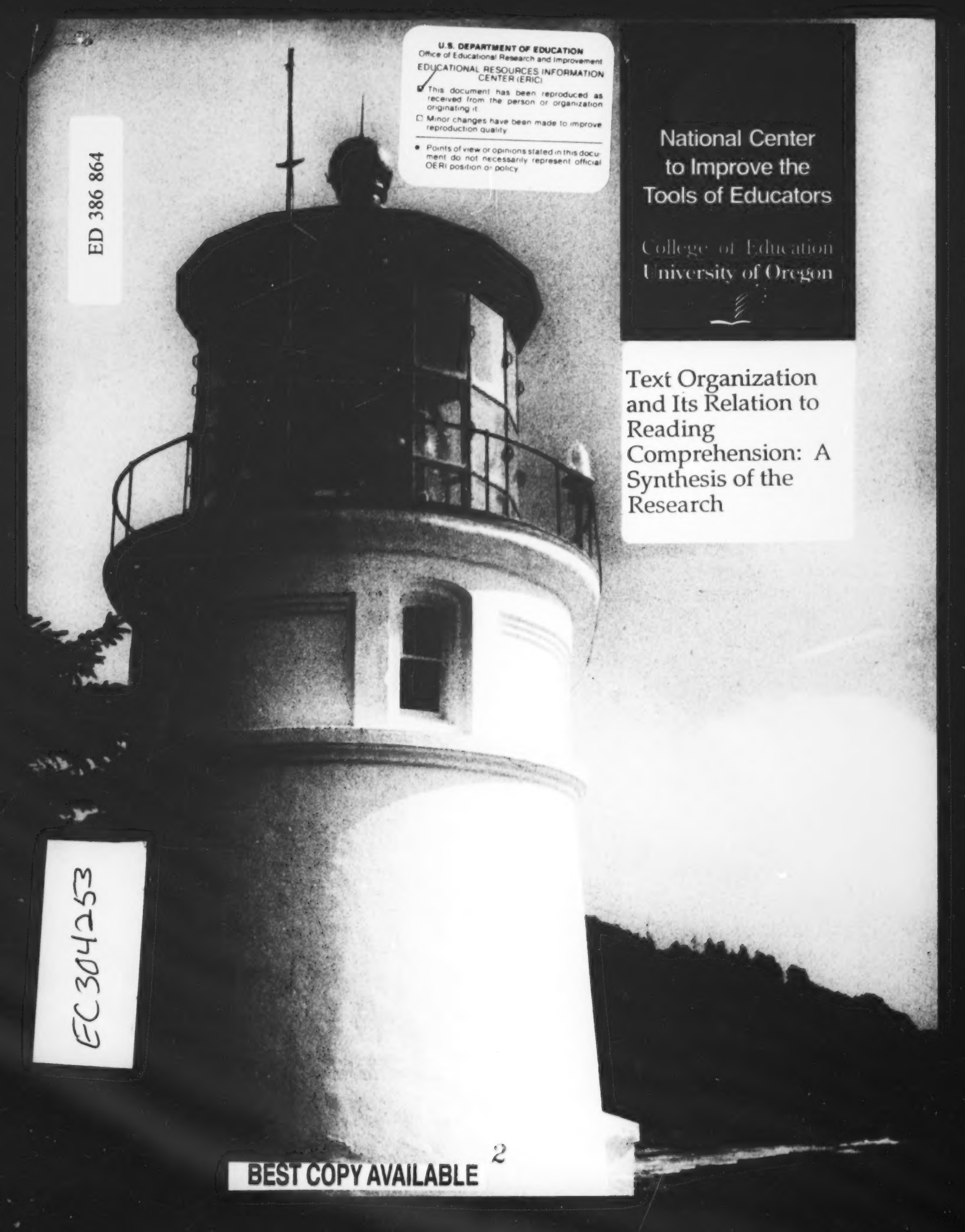

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Text Organization and Its Relation to Reading Comprehension: A Synthesis of the Research

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Running Head: TEXT ORGANIZATION

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Text Organization and Its Relation to Reading Comprehension: A Synthesis of the Research

Reading comprehension is a multifaceted process, with performance indicators ranging from simple recall to interpretations of Shakespearean plays, analyses of concepts, and applications in new contexts. Factors such as IQ, instructional approach, task dimensions, motivation, and time on task affect comprehension. Within the broad area of reading comprehension, this synthesis focuses on the relation between the organization of text and reading comprehension.

The choice of this focus and its subsequent limitations is deliberate. Textbooks may be the most predominant instructional tool in America (Esler & Esler, cited in Scruggs & Mastropieri, 1993; Goodlad, cited in Kinder & Bursuck, 1991), with educators depending largely upon them as the basis for their instruction (Kinder & Bursuck, 1991). Although research suggests that textbook organization affects reading comprehension, evaluations of textbooks have found many to be poorly written. Poorly written textbooks may play a part in the comprehension difficulties of poor readers, especially those who have difficulty recalling content, organizing information, identifying main ideas, and discriminating between relevant and nonrelevant information.

In a descriptive narrative of social studies textbooks and instructional approaches, Kinder and Bursuck (1991) reported on critiques of social studies textbooks by six different groups of evaluators. For example, Kinder and Bursuck (1991) reported that Armbruster and colleagues found many poorly written, incoherent textbooks that often failed to use precise language or make clear the relations between concepts, ideas, and sentences. Further, American history textbooks frequently (a) did not make obvious the major concepts of history (White, cited in Kinder & Bursuck, 1991); (b) provided a brief mention of everything with little, if any, analysis (Tyson & Woodward; Zakariya; cited in Kinder & Bursuck,

1991); (c) tended to trivialize history content (Crabtree, cited in Kinder & Bursuck, 1991); and (d) did not present information in a way that would help students organize facts into a coherent whole (Beck, McKeown, & Gromoll, cited in Kinder & Bursuck, 1991).

Scruggs and Mastropieri (1993) found similar difficulties with science textbooks. In their descriptive narrative on instructional approaches in science, these authors reported that science textbooks provided extensive coverage of content but little opportunity for in-depth practice of important concepts (Mastropieri & Scruggs, cited in Scruggs & Mastropieri, 1993).

Although textbooks frequently are poorly written, incoherent, and fail to show relations between information, students are expected to use them as a primary source of information. Meanwhile, many students have demonstrated difficulties with skills that are central to reading comprehension (i.e., identifying main topics, significant supporting information, and relations between a text's main topics) (Seidenberg, 1989). These reading comprehension difficulties parallel the criticisms that textbooks often do not clarify the main idea (Baumann & Serra, cited in Seidenberg, 1989) or make clear the relations between concepts, ideas, and sentences (Armbruster & Anderson, cited in Kinder & Bursuck, 1991).

With increasing frequency, students with diverse learning needs, including students with disabilities, are in mainstream classrooms (Leo, 1994; U.S. Department of Education, 1992). In these contexts, students have demonstrated varying reading comprehension difficulties, whether the text was a story, social studies chapter, science experiment, or mathematics word problem. For example, when retelling stories, diverse learners appeared to recall less information than their normally achieving counterparts (Montague, Maddux, & Dereshiwsky, 1990). They displayed difficulty understanding characters in stories (e.g., interactions, intentions) and making inferences (Montague et al., 1990). Further, when reading content area texts

such as social studies or science, diverse learners exhibited difficulty distinguishing between relevant and irrelevant information (Seidenberg, 1989), identifying and recognizing the interrelations between main ideas (Seidenberg, 1989), organizing information, and memorizing and retaining isolated facts (e.g., the acts leading to the Revolutionary War in isolation from the concept that Britain wanted to benefit economically from the colonies) (Lovitt; Smith; cited in Kinder & Bursuck, 1991). Although special instructional techniques can enhance the achievement of students with disabilities, success in general education classrooms is defined by, and largely dependent upon, performance in the mainstream curriculum materials and instructional approaches (Scruggs & Mastropieri, 1993).

This synthesis focuses on the effects and implications of text organization, both physical presentation and text structure, and on reading comprehension, with special emphasis on the comprehension of diverse learners.

Methodology

Sources

This review of research examining the relation between text organization and comprehension included seven secondary and seven primary sources. Figure 1 presents a short description of each source. Of the secondary sources, three (i.e., Graesser, Golding, & Long, 1991; Pearson & Fielding, 1991; Weaver & Kintsch, 1991) were book chapters in Handbook of Reading Research: Volume II (Barr, Kamil, Mosenthal, & Pearson, 1991). Four secondary sources were articles (i.e., Kinder & Bursuck, 1991; Scruggs & Mastropieri, 1993; Seidenberg, 1989; Talbott, Lloyd, & Tankersley, in press). One secondary source was a quantitative synthesis using meta-analysis (i.e., Talbott et al., in press); one was a descriptive analysis with a database (i.e., Weaver & Kintsch, 1991); and five were descriptive narratives with research references (i.e., Graesser et al., 1991; Kinder & Bursuck, 1991; Pearson & Fielding, 1991; Scruggs & Mastropieri, 1991; Seidenberg, 1989). Of the primary sources, three

were descriptive studies (Englert & Thomas, 1987; Montague et al., 1990; Zabrucky & Ratner, 1992) and four involved interventions (i.e., Casteel, 1990; Gurney, Gersten, Dimino, & Carnine, 1990; Horton, Lovitt, & Bergerud, 1990; Newby, Caldwell, & Recht, 1989).

Insert Figure 1 about here

Subject Characteristics

In this review, attention is focused on students with diverse learning needs. Diverse learners are defined here as students who, because of their instructional, experiential, socioeconomic, linguistic, physiological, or cognitive backgrounds, differ in their instructional and curricular requirements. The three book chapters included in this review provided context and information primarily about learners in general education ranging in ages from kindergarten through college. The secondary and primary research articles were selected because they included students with diverse learning needs. Students in the secondary and primary research articles were described as high and low readers, good and poor comprehenders, general education students, normal achievers, low performers, low achievers, remedial readers, and students with learning disabilities (LD), dyslexia, behavior disorders, or mild mental retardation.

Summary of Methodology

Two independent reviews of each source were conducted. Each source was reviewed and coded for (a) general conclusions, (b) learner characteristics, and (c) instructional implications, and a multiple-step process was used for convergence of evidence. Following the independent reviews, findings were discussed and clarified by the original reviewers at weekly group meetings. Next, the data for each category were checked by two additional reviewers for reliability, coding clarification, and

refinement. Finally, the data were entered into a database. The primary author of this synthesis further examined the database for converging areas in text organization and carefully reread and examined the secondary and primary sources for supporting information for each area of convergence.

Definitions

Text organization includes the physical presentation of text and text structures. Physical presentation of text includes visual textual cues such as headings and subheadings, signal words, and location of main idea sentences. Text structures are more abstract, less visual presentations of text that involve organizational patterns of text written to convey a purpose (e.g., persuade, describe, compare/contrast, or entertain with a story). Terms used in this synthesis are defined below. For clarity, we will repeat these definitions throughout the synthesis.

- Global comprehension: Comprehension measured by questions about the topics and main ideas of text (Weaver & Kintsch, 1991). Related terms: Macroprocesses, macropropositions (Weaver & Kintsch, 1991).
- Local comprehension: Comprehension measured by questions about details (Weaver & Kintsch, 1991). Related terms: Microprocesses, micropropositions (Weaver & Kintsch, 1991).
- Macropropositions: The top-level "gist" information or meaning of a passage; macropropositions are critically important for understanding and long-term recall of text (Weaver & Kintsch, 1991). Related terms: global meaning, macroprocesses (Weaver & Kintsch, 1991).
- Micropropositions: The smallest definable units of meaning in text (Weaver & Kintsch, 1991). Related terms: local comprehension, microprocesses (Weaver & Kintsch, 1991).

- Physical features: A term used here to include headings, subheadings, signal words, location of topic or main idea sentences, and spacing between "chunks" or idea units within sentences.
- Semantic cues: Indicators of a text structure (Meyer, Brandt, & Bluth, 1980; Seidenberg, 1989). One example of a semantic cue is a topic sentence that uses words to indicate the text structure of the upcoming passage. For example, "The production of woolen yarn is a long and difficult process," signals sequence text structure (Seidenberg, 1989).
- Signal words: Words such as "first," "finally," "as a consequence of," and "as a result of" that emphasize the structure or organization of a passage, but do not add content information (Meyer et al., 1980; Seidenberg, 1989).
- Syntactic cues: Indicators of a text structure; key signal words such as "first" and "then" signal sequence text structure (Seidenberg, 1989), whereas "in contrast," "but," and "similarly" signal compare/contrast text structure (Englert & Thomas, 1987).
- Text structure: The logical connections among ideas in text and subordination of some ideas to others (Meyer et al., 1980); an overall organizing principle for viewing a topic in text (Meyer & Freedle, 1984); top-level organization patterns (Pearson & Fielding, 1991). Related terms: text type, rhetorical form, rhetorical schemata (Weaver &Kintsch, 1991); macrostructure (Pearson & Fielding, 1991; Weaver & Kintsch, 1991); genres of text, top-level structures (Pearson & Fielding, 1991); structural patterns (Seidenberg, 1989). Examples of text structures include narrative, persuasive, sequence, problem/solution, descriptive, and compare/contrast.
- Textual cues: Headings and subheadings, topic sentences, signal words, and author's direct statements of importance (Seidenberg, 1989). Textual cues

include semantic and syntactic signals of differing text structures (Seidenberg, 1989).

Overview of Synthesis

In this review of the research on the relation between the organization of text and reading comprehension, three converging areas of research evidence are presented. The first two support a relation between explicit physical presentation of text and text structure and reading comprehension. The discussion of these two areas of convergence includes (a) definitions, research evidence, and relations to comprehension; (b) student awareness; (c) strategic use; (d) relations to normally achieving and diverse learners; and (e) implications and interventions. The third area of convergence supports the relations between explicit instruction in the physical presentation of text and text structure and reading comprehension. The discussion of this area of convergence includes (a) what to teach, (b) how to teach, (c) caveats, (d) and relations to normally achieving and diverse learners (see Figure 2).

Insert Figure 2 about here

General Areas of Convergence

The studies reviewed for this synthesis provided evidence that the organization of text, students' awareness of that organization, and students' strategic use of text organization affect their comprehension. The organization of text includes the visual, physical organization (e.g., headings, subheadings, location of main idea, spacing) as well as less visible, more abstract text structures (e.g., narrative, sequence, or descriptive text structures) (see Figure 3). The three general areas of convergent evidence from this literature review are:

- Well-presented physical text facilitates reading comprehension.

- Text structure and student awareness of text structure are highly related to reading comprehension.
- Explicit instruction in the physical presentation of text and/or text structure facilitates reading comprehension.

Insert Figure 3 about here

While these convergent areas may seem obvious, the reviews reported by Kinder and Bursuck (1991) noted that the first two (i.e., well-presented physical text facilitates reading comprehension; explicit text structure facilitates reading comprehension) are not commonly practiced. For example, many textbooks are poorly organized or fail to be explicit. Further, none of the research reviewed for this synthesis suggested how often the physical presentation of text or text structure are taught.

Area of Convergence #1: Well-Presented Physical Text Facilitates Reading Comprehension

Well-presented physical text enables readers to identify the relevant information in text, including main ideas and relations between ideas, skills that are central to comprehension (Lorch & Lorch; Miller & Kintsch; cited in Seidenberg, 1989). The components of well-presented physical text are the visual cues that highlight or emphasize main ideas and relations between ideas. Visual cues include location of main idea sentences, author's direct statements of importance, signal words, headings and subheadings, and spacing that divides sentences into "chunks" or meaningful thought units (see Figure 3).

This discussion includes (a) the dimensions of well-presented text and their relation to comprehension, (b) student awareness of well-presented text, (c) strategic

use of well-presented text, (d) relations to learners, and (e) implications and interventions.

Dimensions of Well-Presented Text

The dimensions of well-presented text include those that clearly indicate the main idea, the relations between important information, and the thought units within a sentence. The ability to identify the main idea and relations between important information is important for reading comprehension. Indicators of main ideas and relations between important information focus readers' attention on the global, macrostructure of a text, while the indicators of thought units within sentences focus readers' attention on phrases rather than letters and words. While the indicators of main ideas and relations between information use location, semantic, and syntactic cues, the indicators of thought units within sentences rely upon spacing.

Clarity and location of main idea statements. The ability to identify main ideas is central to comprehension (Lorch & Lorch; Miller & Kintsch; cited in Seidenberg, 1989). Seidenberg (1989) cited empirical support showing that the ability to comprehend main ideas differentiates good and poor readers and is directly related to general comprehension ability (e.g., Baumann; Winograd; Wong; cited in Seidenberg, 1989), summarizing, and outlining (e.g., Rinehart et al.; Richgels et al.; cited in Seidenberg, 1989). Yet, main idea statements often do not appear as the first sentence in a paragraph or are omitted from content area textbooks (Baumann & Serra, cited in Seidenberg, 1989). In a review of text-processing research, Seidenberg (1989) found that general education students ranging from elementary school- through college-age demonstrated difficulties analyzing the main ideas of textbooks, especially if the main ideas were implied in the text rather than clearly stated.

The importance of a clearly stated main idea is supported by several studies cited by Seidenberg (1989). For example, when the main idea was not explicitly stated

in text (a) elementary-age and college-age students had difficulty inventing topic sentences (Brown & Day, cited in Seidenberg, 1989); (b) college-age students had difficulty integrating and summarizing information from different paragraphs of a reading passage (Brown & Day; cited in Seidenberg, 1989); and (c) summarization training was not sufficient to improve sixth-grade students' comprehension (Rinehart, Stahl, & Erickson, cited in Seidenberg, 1989).

The clarity and coherence with which main ideas are presented in text has been found to facilitate their identification (Kieras; Lorch & Lorch; cited in Seidenberg, 1989). In her review of text-processing research, Seidenberg described clear and coherent presentation as including (a) ordering topics systematically (Kieras; Lorch & Lorch; cited in Seidenberg, 1989); (b) stating a good topic organization in the opening paragraph (Kieras; Lorch & Lorch; cited in Seidenberg, 1989); (c) placing the topic sentence of a paragraph at the beginning of a paragraph rather than embedding or inferring it (Kieras; Lorch & Lorch; cited in Seidenberg, 1989); and (d) arranging supporting details in recognizable patterns that exemplify superordinate/subordinate relations (Hare & Mulligan; Memory; Meyer et al.; Pearson & Johnson; Slater, Graves, & Piche; cited in Seidenberg, 1989).

Cues to the relations between important ideas. Another skill that is important for comprehension is the ability to form relations between important information in text. Textbooks make interrelations between information clear by using semantic and syntactic cues. Semantic cues include topic sentences to signal text organization. For example, "The production of woolen yarn is a long and difficult process," signals sequence text structure (Seidenberg, 1989). Syntactic cues include noncontent signal words such as "first," "second," and "finally" to indicate sequential organization (Seidenberg, 1989) and "in contrast," "but," and "similarly" to indicate compare/contrast text structure (Englert & Thomas, 1987). Headings and

subheadings are additional cues to interrelations between important ideas in a text (Seidenberg, 1989).

Despite the importance of interrelations between important ideas, Armbruster and colleagues (cited in Seidenberg, 1989) found many poorly written, incoherent textbooks that failed to use precise language or make clear the relations between concepts, ideas, and sentences. Both normally achieving students and students with diverse learning needs have demonstrated difficulty identifying relations between important ideas. Seidenberg (1989) reported that elementary students made minimal use of superordination of information and demonstrated difficulty integrating information.

An example of students' difficulties in identifying relations between ideas is found in three studies by Horton et al. (1990). While the purpose of their study was to examine the effects of graphic organizers on student ability to organize information, the performance of students who studied without graphic organizer instruction serves as an example of student ability to form relations between important ideas in text. Horton et al. (1990) found that the normally achieving students who read and reread a passage from their textbooks and studied for 20 minutes in any way they chose scored 50%-64% correct on a dependent measure (i.e., a graphic organizer) that required them to identify and show how concepts and supporting facts were related. In the same study, remedial readers scored an average of 39%-44% correct, while students with learning disabilities scored an average of 10%-30% correct when required to identify and show how concepts and supporting facts were related on a graphic organizer.

Spaces between meaningful thought units. Casteel (1990) took a different approach to the physical presentation of text. Rather than examining the effect of location of topic sentences, semantic cues, or headings, he examined the effect of "chunking," or using spaces to divide information in sentences into meaningful

thought units or phrases (e.g., noun phrases, verb phrases). Chunking information allows "perception and recall of idea units rather than letters or single words" (Gillet & Temple, cited in Casteel, 1990, p. 269).

In the Casteel (1990) study, thought units were separated from each other by four spaces rather than the traditional one space between words. When compared with using traditionally spaced text, chunking, or placing extra spaces between meaningful thought units, resulted in significantly higher reading comprehension scores on a multiple-choice measure for 26 eighth-grade low-ability readers (i.e., at or below the fourth stanine on vocabulary or comprehension subtests of the California Achievement Test). By comparison, the chunked passages did not significantly affect the comprehension scores of 24 high-ability readers (above the fourth stanine on vocabulary or comprehension subtests of the California Achievement Test), though their comprehension scores for chunked text were relatively higher than their scores for traditionally spaced text. Casteel concluded that chunked text benefited low performers and was not a detriment for high performers. While it may be difficult for teachers to chunk material in textbooks, Casteel suggested having students chunk verb, noun, and object phrases by placing vertical lines between the chunks or underlining chunks prior to reading.

Student Awareness of the Physical Presentation of Text

Student awareness of the physical presentation of text facilitated their ability to identify main ideas and interrelations between important information. Students better identified main ideas and their supporting details if they were aware that main ideas and their supporting details occurred in recognizable patterns that exemplified superordinate/subordinate relations (Hare & Mulligan; Memory; Meyer, Brandt, & Bluth; Pearson & Johnson; Slater, Graves, & Piche; cited in Seidenberg, 1989). Additionally, student recognition and use of visual textual cues (e.g., headings, signal words, location of main ideas) contributed to their ability to

identify the important ideas in text and their interrelations (Garner & McCaleb; Winograd; cited in Seidenberg, 1989).

While chunking (i.e., using spaces to separate thought units in sentences) has support as another method for physically presenting text to facilitate comprehension, Casteel (1990) did not discuss student awareness of chunked text. It may be that chunked text makes meaningful thought units visual to low ability readers, while high ability readers are aware of and use textual cues (i.e., headings, signal words, location of main ideas) to identify meaningful thought units.

Strategic Use of Well-Presented Text

"Strategies" refer to an organized set of actions designed to accomplish a task. The physical structure of passages provides the basis for strategies that readers use to identify main ideas. To identify the main idea, most readers use simple strategies and prior knowledge matched to the organizational structures of passages (Kieras, cited in Seidenberg, 1989). For example, the reader tests the first sentence to see if it expresses a reasonable main idea and then tries to subsume each succeeding sentence into the main idea based on whether the sentence is related or irrelevant to the main idea. If the reader is unable to fit the sentences into the probable main idea, he or she may revise the main idea.

In another strategy involving the physical presentation of text, students use headings, subheadings, and paragraph topics to summarize text. Students who were taught this strategy recalled text information better than students answering questions or studying longer (Taylor & Beach, cited in Pearson & Fielding, 1991). While Casteel (1991) investigated chunking, a form of the physical presentation of text that uses space to separate thought units in sentences, he did not discuss strategic use of chunked text.

Relations Between Well-Presented Text and Types of Learners

Normally achieving learners. Summarizing, integrating information, and forming relations between important information are important reading comprehension skills. Fluent readers use textual cues to identify important information to include in summaries (Winograd, cited in Seidenberg, 1989). However, when the main idea is implicit rather than clearly presented, normally achieving students have demonstrated difficulty identifying main ideas and integrating information (Seidenberg, 1989). Normally achieving students have also demonstrated difficulty showing the relations between concepts or important pieces of information (e.g., Horton et al., 1990).

Chunking text (i.e., using spaces to separate thought units in sentences) is another form of the physical presentation of text. Chunked text appears to neither benefit nor hinder high-ability readers (Casteel, 1990). While high-achieving readers demonstrated some improvement in comprehension while reading chunked text, the improvement was not significant.

Diverse learners. Students with LD have demonstrated difficulty following main ideas, recognizing main topics and their interrelations, and recognizing that main topics are supported by superordinate and subordinate ideas or examples (Seidenberg, 1989). Seidenberg proposed that when students with LD have comprehension difficulties, teachers need to consider whether the students are able to identify the important information in a reading passage. Therefore, they may need explicit training to increase sensitivity to important text information. Winograd (cited in Seidenberg, 1989) found that poor readers often chose important information based on what was of high personal interest to them and made decisions about what to include in their summaries on a sentence-by sentence basis, rather than using textual cues to identify important information. Additionally, poor readers demonstrated difficulty integrating separate idea units into larger units

(Winograd, cited in Seidenberg, 1989), and organizing their reading input in a meaningful way (Casteel, 1990).

Implications and Interventions

Text that clearly signals main ideas and relations between ideas facilitates comprehension. Techniques for clearly presenting text include (a) ordering topics systematically; (b) stating topic organization in the opening paragraph; (c) placing topic sentences at the beginning of paragraphs; (d) arranging supporting details in recognizable patterns that exemplify superordinate/subordinate relations; (e) using precise language to make clear the relations between concepts, ideas, and sentences; (f) using signal words such as "first," "second," and "finally;" and (g) using headings, subheadings, and topic sentences to cue the interrelations between important ideas.

Additionally, one study in this review (i.e., Casteel, 1990) indicated that additional spacing between idea units facilitated reading comprehension for low readers and did not interfere with the reading comprehension of high-ability readers. As a result of these findings, publishers may want to place extra spaces between idea units in sentences, or teachers may want to teach low-performing students to draw vertical lines between or underline the idea units in the sentences in their textbooks.

Area of Convergence # 2: Text Structure and Student Awareness of Text Structure are Highly Related to Reading Comprehension

In general, "text structure" refers to the organizational features of text that serve as a frame or pattern (Englert & Thomas, 1987) to guide and help readers identify important information (Seidenberg, 1989) and logical connections between ideas (Meyer, Brandt, & Bluth, cited in Englert & Thomas, 1987; Seidenberg, 1989). Text structure appears to play an important role in reading comprehension. Moreover, there is strong empirical evidence that readers' awareness of text structure is highly related to reading comprehension.

Text structure usually refers to two types of text: narrative and expository. Narrative is more common than expository text and is usually a story written to entertain the reader (Weaver & Kintsch, 1991). By comparison, common expository texts include persuasion, explanation, comparison/contrast, enumeration or collection, problem-solution, and description, designed primarily to inform the reader (Weaver & Kintsch, 1991) (see Figure 3). The distinction between narrative and expository text is not a simple dichotomy, however. For example, novelists may write stories to persuade or inform, just as writers of expository text may write to entertain (Pearson & Fielding, 1991). Following is a discussion of narrative and expository text structures and their differing effects upon readers, student awareness of text structures, strategic use of text structures, relation of text structures to learners, and implications and interventions.

Types of Text Structures

Narrative text structure. The most familiar and most studied (Graesser et al., 1991) text structure is narrative text or stories. Although there is no prevailing consensus on the definition of narrative text and some debate over the features of a story, narrative text depicts events, actions, emotions, or situations that people in a culture experience (Graesser et al., 1991). A story is written to excite, inform, or entertain readers (Pearson & Fielding, 1991) and may report actual or fictitious experiences (Graesser et al., 1991). While there are no clear boundaries between categories, narratives include myths, epics, fables, folktales, short stories, novels, tragedy, and comedy. The depictions of events are organized so that the audience can eventually anticipate them. That is, readers must be able to infer motives of characters and the causal relations among events.

Narratives normally involve (a) animate beings as characters with goals and motives; (b) temporal and spatial placements usually presented at the beginning of the story; (c) a problem or goal faced by the main character that imitates a major goal;

(d) plots or a series of episodes that eventually resolve the complication; (e) impacts upon the reader's emotions and arousal levels; and (f) points (e.g., justice, honesty, loyalty), morals, or themes.

Just as there is no consensus on the definition of narrative text, there is no consensus on how stories are constructed. There are various theories about the components, levels, dimensions, and perspectives of narrative text, but each theory falls short of capturing all of the potential intricacies of stories or the ways in which stories involve the reader's emotions. Each theory includes (a) recommendations for what makes stories interesting, (b) the reader's knowledge of the world, (c) inferences, (d) memory of the story, and/or (e) reading comprehension. Theories also contain logic, principles, concepts, and/or constraints to determine how a story is constructed. Names for these various theories included causal network (Trabasso & associates, cited in Graesser et al., 1991); conceptual graph structures (Graesser and associates, cited in Graesser et al., 1991); scripts (Schank and Abelson, cited in Graesser et al., 1991); story points (Wilensky, cited in Graesser et al., 1991); plot unit (Lehnert, cited in Graesser et al., 1991); and analysis of thematic affect units (Dyer & associates, cited in Graesser et al., 1991). They are described in greater detail in Graesser et al. (1991).

One theory, story grammar, is the oldest theory of narrative structure and the one most used in research during the last 10 years. Just as there are many theories of narrative text structure, there are many story grammars.

A story grammar refers to "abstract linguistic representation of the idea, events, and personal motivations that comprise the flow of a story" (Pearson & Fielding, 1991, p. 821). A story grammar captures the important properties of a story and guides comprehension of stories that have "(a) a single main protagonist who encounters a problem-solving situation, (b) a goal that the protagonist attempts to achieve, (c) a plot that unravels how the protagonist attempts to achieve the goal,

and (d) an outcome regarding whether the goal was achieved" (Graesser et al., 1991, p. 179). Further, story grammars specify the (a) major components of a story (e.g., Thorndyke's setting, theme, plot, resolution; Stein and Glenn's episode, initiating event, internal response, attempt, consequence, reaction; cited in Graesser et al., 1991); (b) hierarchical relations between story grammar components; and (c) rules that govern what information is included or deleted within the story, order of information, relations between story components, and embedding of episodes within story components such as the beginning, outcome, or ending. More complex stories normally have multiple episodes and follow rules that allow changes and deletions of story grammar components (Graesser et al., 1991).

The assumption behind story grammar theory is that story grammar components and their hierarchical relations represent frames or patterns that readers can use to store information in long-term memory. Pearson and Fielding (1991) cited five references that support the validity of story grammars as models of comprehension by providing evidence that adults' and children's story retellings matched the sequential order of story grammar components and that the frequency of recalled information correlated with the hierarchical position of the information in the story grammar framework. Story grammars generate predictions about patterns of passage recall, passage summarization, importance ratings of statement, passage statement clusters, and reading time, but there has been controversy over whether story grammars or other representations of knowledge (e.g., knowledge about planning, social action, motives) can explain these predictions (Graesser et al., 1991). Despite these controversies, Graesser et al. (1991) concluded that story grammars unite dozens of empirical trends into one theory of story construction.

Expository text structures. While narrative text structure primarily entertains, expository text primarily communicates information (Weaver & Kintsch, 1991). Textbooks, essays, and most magazine articles are examples of expository text

(Pearson & Fielding, 1991). Seidenberg (1989) posited that the ability to comprehend and formulate expository prose is essential for achievement in school. When learners read content area material such as social studies or science, they must attend to a variety of text structures (Englert & Hiebert, 1984). While narrative text structures has largely focused on story grammars, research on expository text has spanned a much broader range of organizational patterns. Common expository text structures include compare/contrast, classification, illustration, procedural description (Weaver & Kintsch, 1991), sequence, enumeration or collection, problem-solution, and description (Meyer & Rice, 1984). Each type of expository text structure is represented by an organizational pattern that includes differing types of relations between important information in the text. Kintsch (cited in Weaver & Kintsch, 1991) described three types of relationships between ideas in expository text: (a) general-to-particular, as in identification, definition, classification, or illustration; (b) object-to-object, as in comparison/contrast; and (c) object-to-part, as in structural analysis to tell how to put something together, functional analysis to tell how something works, or causal analysis to tell a cause or consequence.

Research evidence suggests that well-structured expository text facilitates comprehension of main ideas or topics, rather than facts. For example, Kintsch and Yarbrough (cited in Weaver & Kintsch, 1991) found that students who read well-structured essays that showed clear relations between ideas, performed better on a measure of global comprehension (macroprocesses; e.g., topic and main-point questions) than did students who read essays on the same content in which the order of paragraphs did not follow principles of organization and in which cues to text structure were deleted. Performance was equal on a measure of local comprehension (microprocesses), measured using cloze procedures (i.e., a measure in which students fill in the missing words deleted from a passage they have read).

Differing effects of narrative and expository text structures. Narrative and expository texts have been found to have differential effects upon readers, with narrative appearing easier to comprehend and monitor than expository text. Zabrucky and Ratner (1992) examined the effects of eight narrative and eight expository passages on the comprehension monitoring and recall of 16 good and 16 poor sixth-grade readers. Some passages contained a sentence that was inconsistent with the rest of the passage, while other passages did not. Text was presented on a computer screen, one sentence at a time. Reading times and students' verbal reports were used to examine students' evaluation of their comprehension and look-backs to inconsistencies during reading.

For both good and poor readers, text type affected recall and comprehension monitoring. Students recalled significantly more idea units from narrative than expository passages. When comparing texts with inconsistencies to texts without inconsistencies, students looked back more frequently for inconsistent narrative than inconsistent expository text, suggesting that inconsistencies were more apparent in narrative than in expository text. Students were also better able to verbally report on passage consistency after reading narrative than expository passages. Students reread expository passages more frequently than narrative passages when the passages did not contain inconsistent information, indicating that students found expository text more problematic than narrative text. Additionally, students reread more frequently when inconsistent text was adjacent to the correct sentence than when it was far from the correct sentence.

Student Awareness of Text Structures

Although well-organized text structure appears important to reading comprehension, it may not be sufficient to facilitate comprehension. Often "awareness" of text structures adds an important dimension. In the text structure literature, various terms are used to describe the reader's awareness of text structure:

familiarity (Graesser et al., 1991; Gurney et al., 1990; Weaver & Kintsch, 1991); knowledge (Englert & Thomas, 1987; Graesser et al., 1991; Gurney et al., 1990; Montague et al., 1990; Seidenberg, 1989); awareness (Englert & Thomas, 1987; Seidenberg, 1989); sensitivity (Seidenberg, 1989); and recognition (Seidenberg, 1989). In this synthesis, we use the authors' original terms as much as possible. If the findings or conclusions of two or more authors are summarized, a term that captures the spirit of both studies will be used.

In their reviews of text-processing and expository text structure research, Seidenberg (1989), Weaver and Kintsch (1991), and Pearson and Fielding (1991) discussed the importance of the reader's awareness (Seidenberg, 1989), familiarity (Weaver & Kintsch, 1991), or knowledge (Pearson & Fielding, 1991) of text structure. Weaver and Kintsch (1991) reported that learners "familiar" with text structure who read well-structured, clearly cued text performed better on measures of global comprehension (e.g., main topics) than students who did not demonstrate familiarity with test structure.

Student awareness of structural patterns in expository writing (e.g., sequence, causation, comparison/contrast) facilitated recall of not only more text information, but more theses or main ideas (Seidenberg, 1989). Pearson and Fielding (1991) reported two consistent findings: "First, students who are knowledgeable about and/or follow the author's structure in their attempts to recall a text remember more than those who do not. Second, more good than poor readers follow the author's structure in their attempt to recall a text" (p. 827). Both Weaver and Kintsch (1991) and Seidenberg (1989) noted that "awareness" of text structure benefits reading comprehension of global ideas, or main theses or ideas.

Research evidence suggests that students vary in their awareness of different text structures. For example, there is strong research support that students have a greater awareness of narrative than expository text structures (Graesser et al., 1991)

and that students remember and comprehend narrative text structure easier than they do expository text structure (Zabrucky & Ratner, 1992). Indeed, in a primary study comparing the differences between students with LD and normally achieving students in processing narrative text, Montague et al. (1990) concluded that most school-aged children have acquired knowledge of a story schema (awareness of narrative prose) and use that knowledge during story comprehension and production tasks.

Graesser et al. (1991) posed three reasons for the "privileged status" of narrative text structure. First, narrative content is more familiar to students than expository content. Graesser et al. (1991) referred to the more familiar content as mutual knowledge, with narrative text structure having a higher density of "mutual knowledge" (e.g., shared experiences, world knowledge structures) than expository text structure. Second, this familiar content of narrative includes event sequences (e.g., intentional acts in pursuit of goals; events that occur in the material world). Event sequences are the core content of children and adults' experience in everyday life. According to Nelson (cited in Graesser et al., 1991), everyday event sequences are the primary form of world knowledge for children. Third, narrative structure is prevalent in oral language. Contrary to narrative text structure's familiar content, expository prose is written primarily to convey new knowledge.

Just as students are more aware of narrative text structure than expository text structure, their awareness of the many expository text structures varies. In a primary study of expository text structure, Englert and Thomas (1987) examined student awareness of four types of expository text structures: description, enumeration, sequence, and comparison/contrast texts. The study included 36 students reading at grade-level or above, 36 low-achieving students, and 36 students with learning disabilities (LD), evenly divided between grades 3 and 4 (younger group) and grades 6 and 7 (older group). Students' sensitivity to the text structures was measured using

a 12-item task requiring students to discriminate between sentences that (a) presented details related to the paragraph topic and text structure, and (b) sentences that distracted or presented intrusive information. Englert and Thomas (1987) found that (a) sequence text structure was significantly easier than enumeration and description text structures, and (b) enumeration and sequence text structures were significantly easier than compare/contrast text structure.

While examining students' sensitivity to the four different text structures, Englert and Thomas (1987) also concluded that awareness of text structure may be developmental. Of the participants in their study, 54 were younger (grades 3 and 4) and 54 were older students (grades 6 and 7). The older students (including students with LD) exhibited significantly more awareness of expository text structure than the younger students.

Strategic Use of Text Structures

In her narrative review of text-processing research, Seidenberg (1989) reported that a number of studies (e.g., Hiebert, Englert, & Brennan; Kintsch & Yarbrough; & McGee; cited in Seidenberg, 1989) have provided evidence that effective readers use strategies linked to text structure awareness to effectively identify and recall main ideas and supporting information, and to summarize (Winograd, cited in Seidenberg, 1989). Students with LD, on the other hand, although they may have acquired a repertoire of strategies for processing information, do not spontaneously apply them when engaged in activities that require goal-directed or planning activity (Torgesen; Wong; cited in Montague et al., 1990).

Relations Between Text Structures and Types of Learners

Normally achieving learners. Normally achieving students appear more facile with both narrative and expository text structures than diverse learners. One indicator of facility with text is the number of times readers look back at text to correct comprehension failures. Good readers had significantly more look-backs

than poor readers for difficult (i.e., expository) text and significantly more look-backs for expository than narrative passages. Good readers also had more look-backs for inconsistent text than poor readers, though the differences were not significant. Good readers correctly reported significantly more inconsistencies than poor readers (Zabrucky & Ratner, 1992).

In a comparative study of students' narrative text-structure processing, Montague et al. (1990) concluded that students without learning disabilities recalled more information than students with LD and included more information in their story retells. Similarly, Zabrucky and Ratner (1992) found that good readers had significantly more recall than poor readers for both narrative and expository text.

The ability to identify main topics, significant supporting information, and interrelations among a text's main ideas are processes that appear central to comprehension (Lorch & Lorch; Miller & Kintsch; cited in Seidenberg, 1989). Effective readers appear to use strategies linked to expository text structure awareness to process text information (Hiebert, Englert, & Brennan; Kintsch & Yarbrough; McGee; cited in Seidenberg, 1989). Additionally, effective readers used textual cues and the meaning of the whole text to identify important information to include in summaries (Winograd, cited in Seidenberg, 1989).

Not all normally achieving readers appeared to be aware of text structure, however. In a study that included ninth-grade, eleventh-grade, and college-age students, Garner (cited in Seidenberg, 1989) found that, across age levels, students were deficient in their awareness of and ability to integrate information.

Diverse learners. Zabrucky and Ratner (1992) found that poor readers did not differ in the number of times they monitored their comprehension by looking back at sentences for narrative and expository text. Because narrative is easier to comprehend than expository text, Zabrucky and Ratner (1992) concluded that poor readers did not regulate their understanding when reading difficult text. In addition,

there was no difference in poor readers' and good readers' detection of inconsistencies during reading. However, poor readers were less able than good readers to comment accurately on passage consistency after reading. Poor readers were no different than good readers in reading problematic or inconsistent text. However, poor readers demonstrated significantly less recall than good readers (Zabrucky & Ratner, 1992).

Many comprehension difficulties of diverse learners have been attributed to their deficits in text structure awareness (Englert & Thomas, 1987). For example, one hypothesis for why students with LD appear to recall less narrative text than normally achieving students (Montague et al., 1990) is that they have an incomplete "schema," or awareness of narrative prose. In a primary study of narrative text structure and students with LD, Montague et al. (1990) concluded that the incomplete development of a story grammar by students with LD, as demonstrated in their significantly shorter story recalls, may be due to these students' lack of expertise in interpreting or expressing the affective information about the characters in the story (e.g., human intentions, social interactions, problem solving). Students with LD may also be deficient in their discrimination of various levels of meaning in stories, and less aware of subtle differences in the importance of story propositions compared to students without learning disabilities. Additionally, students with LD had difficulty recalling fine details, using connective words that signal temporal and causal relations, and identifying text-based inferences in stories.

One facet of text structure awareness that differentiated between poor and good readers was the ability to recognize inconsistencies in expository content. Examining text structure awareness of normally and low-achieving students and students with LD, Englert and Thomas (1987) found that normally achieving students identified significantly more inconsistencies in text than low-achieving students, who, in turn, identified significantly more inconsistencies in text than students with LD. This

difference existed even when students with LD were matched by reading ability and IQ with younger, normally achieving students.

The inconsistencies task consisted of paragraphs written in description, enumeration, sequence, and comparison/contrast text structures. Each paragraph contained three sentences, one that indicated the topic of the paragraph, one that signaled the specific type of text structure, and one that provided an exemplar detail sentence that met topic and text structure requirements. For the decision task, four sentences were presented. Two extended the ideas introduced in the first two sentences and were consistent with the established topic sentence. Two were distractors. Students were required to decide the degree to which each sentence fit the topic and text structure of the paragraph stems.

Englert and Thomas (1987) concluded that the deficit in text structure awareness in students with LD affected their ability to use the interrelationships in text to predict forthcoming relevant details based on the text structure, to extract essential from nonessential information, and to be sensitive to their own comprehension failures. Thus, students with LD did not look back to the original stimulus sentences to confirm the relationship between the main idea and supporting details. This study also indicated that, similarly to normally achieving students, students with learning disabilities and low achievers appeared to acquire text structure knowledge developmentally (Englert & Thomas, 1987).

Another area affected by poor readers' lack of sensitivity to text structure is summarization. Seidenberg (1989) reported that eighth-grade poor readers did not appear to use text structure awareness to summarize text. Although they appeared aware of the need to include important ideas in a summary, they had difficulty identifying important ideas in a reading passage and constructing an internal topic structure representation of the text information. Rather than use the strategic skills required to produce an adequate summary or the meaning of the whole text, they

made sentence-by-sentence decisions determined by the position of information and by what was important to them (Winograd, cited in Seidenberg, 1989).

Implications and Interventions

The evidence is clear that text structure and students' awareness of text structure are positively related to reading comprehension. Student sensitivity to text structure may be developmental and varies according to text structure type. Generally, narrative is easier than expository text for students and some types of expository text are easier than others (e.g., sequence was found to be easier than enumeration and description, which in turn was found to be easier than compare/contrast) (Englert &Thomas, 1987).

Teachers should be aware of these variations and may want to attend more carefully to text structure as students move to reading more expository text in the upper-elementary school grades. Zabrucky and Ratner (1992) posed that teachers be concerned with increasing students' awareness of different text structures and informing students of the impact of these structures on evaluation, regulation, and memory. Students should be taught to adjust their reading and rereading skills and to assess their readiness for recall when text information varies in difficulty. This instruction may be more effective if it occurs for narrative before expository text.

Additionally, among many models of narrative text, story grammars are the most studied (Graesser et al., 1991) and have been linked to improved comprehension (Pearson & Fielding, 1991). As a result, story grammars are valid and useful to teach.

Kinder and Bursuck (1991) argued for a unified social studies curriculum that "integrated facts and concepts into a network of knowledge" (p. 319). Research evidence suggests that well-structured expository text facilitates comprehension of main ideas or topics, rather than facts (Weaver & Kintsch, 1991). Consequently,

clearly written and organized expository text structures in textbooks would facilitate students' reading comprehension of a "network of knowledge."

Students tend to receive limited sustained practice in reading and writing expository prose (Applebee, cited in Englert & Thomas, 1987). One reason LD students may differ significantly from low-achieving peers in discriminating between relevant and inconsistent information in text passages may be that they lack experience with expository text. Consequently, students with learning disabilities must be exposed to good models of expository text structure (Englert & Thomas, 1987).

Diverse learners appear deficient in text structure awareness, which indicates a need for specific instruction in text structure (Seidenberg, 1989). As noted by Englert and Thomas (1987), "Unfortunately, since students gain knowledge via expository prose, teachers who do not direct attention to the text structures that underlie expository discourse may be depriving LD students of important opportunities to develop self-sufficiency in communication skills essential to their independence as adults" (p. 103).

Area of Convergence # 3: Explicit Instruction in Text Organization Facilitates Comprehension

Research in both the physical presentation of text and text structures supported the benefits of explicit instruction in these areas. Seidenberg (1989) concluded that instruction in the physical presentation of text facilitates the reading comprehension of students with LD. Instruction in text structures had strong empirical support for benefiting reading comprehension. For example, primary studies provided evidence of the effectiveness of instruction in narrative text structure for students with LD (e.g., Gurney et al., 1990; Newby et al., 1989). Finally, Pearson and Fielding (1991) provided strong evidence of the benefit of "just about any" (p. 832) type of instruction in expository text structure.

In this section, we discuss what to teach, how to teach, caveats, and relations between instruction and learners. The discussion of what to teach includes physical presentation of text, narrative text structure, expository text structures, visual representations of text, and strategies. The discussion of visual representations of text is lengthy and could have been a convergent area of its own. However, it is one of several ways to teach text structure and, therefore, more properly belongs within the converging evidence that supports instruction in text organization. Note that the discussion of strategies is subsumed under what to teach, rather than being treated separately as it was in the two previous areas of convergence. The discussion of "how to teach" highlights information that is presented in more detail in a synthesis reviewing text organization and curricular and instructional implications for diverse learners (Dickson, Simmons, & Kameenui, 1995).

What to Teach

Physical presentation of text. In her review of information-processing studies, Seidenberg (1989) concluded that students with LD benefited from explicit, task-specific instruction on (a) how to recognize the physical presentation of important information in text, including topic sentences and where these usually occur in well-organized paragraphs; and (b) headings and subheadings and their purposes. In the same review, Seidenberg (1989) identified two additional structural cues to teach students: the patterns that exemplify subordinate and superordinate relations; and signal words (e.g., "first," "finally").

Taylor and colleagues (cited in Pearson & Fielding, 1991) found that teaching students a summarizing strategy using the headings, subheadings, and paragraph topics of textbooks resulted in more recalled text information than answering questions or studying.

Narrative text structure. Even though narrative text structure may be taught using any number of models (e.g., story grammars, causal networks, conceptual

graph structures, scripts and plans), story grammars are the oldest and most studied (Graesser et al., 1991). Moreover, they have been validated as benefiting reading comprehension (e.g., Gurney et al., 1990; Newby et al., 1989; Pearson & Fielding, 1991) and predicting readers' performance (Graesser et al., 1991). Additionally, they have been viewed as unifying several research trends in narrative text structure into one theory (Graesser et al., 1991).

Story grammar instruction usually includes a simplified version of story grammar components as well as practice in identifying category-relevant information (Pearson & Fielding, 1991). Pearson and Fielding (1991) found strong support that instruction in a story grammar resulted in improved reading comprehension of stories beyond those used in the studies' interventions and "real" stories (i.e., stories not adapted to fit narrative text structure).

Further, two primary studies (i.e., Gurney et al., 1990; Newby et al., 1989) in this synthesis provided support for teaching a story grammar to students with dyslexia and LD. The two studies included students in different age ranges, 8 to 10 years (n = 5) (Newby et al., 1989) and high school (n = 7) (Gurney et al., 1990), with dyslexia (Newby et al., 1989) or learning disabilities (Gurney et al., 1990). In each study, students were taught story grammar elements. Specifically, in Gurney et al. (1990), students were taught four major story grammar components: (a) main character and main problem/conflict; (b) character clues (e.g., characters' actions, dialogue, thoughts, physical attributes, and reactions to other characters and events); (c) resolution; and (d) theme. In the Newby et al. (1989) study, students were taught the following story grammar components (a) main character, (b) problem encountered by the main character, (c) setting, (d) events or attempts by main character to solve the problem, and (e) solution or resolution of the problem.

The effects of story grammar instruction were students' improved ability to comprehend qualitatively important ideas from stories. "Qualitatively important"

was defined as the most important or central ideas in a story (Newby et al., 1989) or the story grammar elements (Gurney et al., 1990). Although students' comprehension of qualitatively important information improved, their recall of detail (Newby et al., 1989) or answers to typical basal literature questions that focused on literal or minor details (Gurney et al., 1990) did not. Gurney et al. (1990) concluded that a story grammar provided students with disabilities a framework that helped them comprehend stories at a more sophisticated level. That is, story grammar instruction guided students away from minor details toward identification and articulation of important ideas. Students receiving typical basal instruction (define vocabulary words, set purpose for reading or activate background knowledge, read, answer questions), on the other hand, demonstrated no improvements in answering traditional basal questions (Gurney et al., 1990) or recalling ideas (Newby et al., 1990).

Montague et al. (1990) concluded that instruction should focus on the goals, motives, thoughts, and feelings of the characters in the stories. This focus increased the amount of information students wrote about the characters, and consequently the length of the stories they generated.

In summary, instruction in story grammar elements provided a framework that facilitated students' comprehension of the important ideas of a story, but not the details. Students with learning disabilities may require additional focus on the goals, motives, thoughts, and feelings of the characters in stories.

Expository text structures. In their review of research on comprehension instruction, Pearson and Fielding (1991) found "incredibly positive support for just about any approach to text structure instruction for expository text" (p. 832) for facilitating comprehension and short- and long-term memory for text. Approaches to text structure instruction included both systematic attention to clues that signal how authors relate ideas to one another and systematic attempts to impose structure

upon text. Their review included (a) five studies that taught students top-level structures (e.g., cause-effect, problem-solution) and how to use these structures for reading and studying, that resulted in enhanced recall and/or comprehension; and (b) 13 series of studies that taught students to study or create visual representations of key ideas in text including networking, flowcharting, Con Struct, mapping, conceptual frames, graphic organizers, conceptual mapping, and other visual organization devices, that resulted in facilitation of comprehension.

Seidenberg (1989) found similar empirical support for teaching text structure. Three of the studies she reviewed included instruction in text structure or awareness of top-level information (e.g., main ideas), resulting in improved recall of content, comprehension of unfamiliar content, and/or expository writing compared to students who did not receive similar instruction. Seidenberg added that instruction should include how to recognize and use the various text structures.

While the ability to comprehend expository text has been called essential for school success (Seidenberg, 1989), many researchers have found textbooks, particularly social studies textbooks, to be lacking in explicit text structure or organization (e.g., Armbruster and colleagues; White; cited in Kinder & Bursuck, 1991).

Kinder and Bursuck (1991) reported on one preliminary examination in which history content instruction was organized through a problem-solution-effect text structure. Three junior-high school special education classrooms of 4 to 10 students identified as having behavior disorders participated in a multiple-baseline study. During baseline, "traditional" instruction in American history consisted of (a) read, (b) discuss, (c) answer textbook and workbook questions, and (d) test. Students' test scores at this stage ranged from 45% to 57%. A problem-solution-effect text structure was then introduced. Instruction consisted of (a) read; (b) analyze the problem,

solution, and effect with teacher help; (c) write problem-solution-effect text structure notes; (d) develop timelines; and (e) write definitions of text-identified vocabulary words. Average scores on tests ranged from 78% to 85%. Students demonstrated the most difficulty developing problem and solution statements, a skill that requires comprehension skills. Only toward the end of the intervention were students able to begin to state the problem and solution in their own words. More research is needed to determine whether students could independently apply the strategy to published textbooks or other texts (Kinder & Bursuck, 1991).

Zabrucky and Ratner (1992) suggested that teachers be concerned not only with increasing students' awareness of different text structures, but also with informing students of the impact text structures have on evaluation, regulation, and memory. They suggested generalizing metacognitive skills to more difficult expository passages after training with narrative passages.

Visual representations of text. Pearson and Fielding (1991) reported that 13 series of studies teaching students to study or create visual representations of key ideas in text (e.g., networking, flowcharting, Con Struct, mapping, conceptual frames, graphic organizers, conceptual mapping) benefited reading comprehension. Armbruster, Anderson, and colleagues (cited in Pearson & Fielding, 1991) reasoned that instruction should also include opportunities to use and construct graphic organizers. Two types of visual representations of text, networking (Dansereau & colleagues, cited in Pearson & Fielding, 1991) and Flowcharting (Geva, cited in Pearson & Fielding, 1991) have frequently been found to be more effective for low-performing students than for high-performing students (Pearson & Fielding, 1991). It may be that high-performing students develop their own strategies, while low-performing students require careful instruction in strategies (Pearson & Fielding, 1991).

A series of three primary studies provided additional support for the benefit of instruction in visual representations of text for students with a range of abilities. Horton et al. (1990) conducted these studies in seventh- and tenth-grade general education classrooms (i.e., social studies, science, and health) containing students with heterogeneous abilities ranging from students with learning disabilities (n = 1 - 5), remedial students (n = 0 - 9), and students without identified disabilities (n = 36 - 175). The study compared four types of instruction in graphic organizers with student-selected self-study.

Self-study consisted of reading and rereading an assigned textbook passage for 15 minutes, and studying or taking notes for 20 minutes in a manner of students' own choosing (e.g., diagram, outline, write short statements of main ideas, formulate and answer questions, or define key terms).

Graphic organizer instruction consisted of reading and rereading for 15 minutes, and completing and studying graphic organizers for 20 minutes. On a blank graphic organizer, teachers directed student attention to general relations between the categories shown on a diagram. In study 1, teachers led students in either filling in the graphic organizer or using a pre-filled graphic organizer. In study 2, students were allowed 15 minutes to independently complete a graphic organizer using a cover sheet that contained page and paragraph numbers for locating answers in the textbook, with a teacher providing assistance when required. In study 3, students completed a graphic organizer using a list of phrases that fit appropriate places on the graphic organizer. Students in the experimental groups studied their completed graphic organizers for 5 minutes before taking the test that consisted of filling in a blank 15-item graphic organizer.

Instruction in using graphic organizers to visually represent text had consistent effects regardless of content area (i.e., social studies, science, and health) or grade level (i.e., middle and high school). Specifically, in 10 minutes, students who

received instruction in graphic organizers filled in significantly more correct responses on the test graphic organizer than did students in the self-study groups. The results for each type of learner in the study were as follows: (a) students with LD in the graphic organizer groups averaged 70% correct compared to 20% correct for self-study students with LD; (b) remedial students in the graphic organizer groups averaged 74% correct compared to 42% for remedial students in the self-study groups; and (c) general education students in the graphic organizer groups averaged 86% compared to 56% for those in the self-study groups.

Each type of graphic organizer instruction offered instructional benefits. In teacher-directed instruction (study 1), the teacher determined the pace of activity, kept students on task, drew a range of students into the discussion, and embellished facts and ideas. In student-directed graphic organizers with references to page and paragraph numbers (study 2), students extracted information from text independently, and practiced using referential cues. The teachers were free to provide individual help. In the clue or phrases condition (study 3), the clues provided a structure similar to a teacher-directed lesson, but students had to interact independently with the text.

Horton et al. (1990) concluded that graphic organizers helped make mainstreaming a valid instructional delivery system for all students. However, the studies had two limitations. First, researchers rather than teachers constructed and filled in the original graphic organizers. In a replication of study 2, researchers taught teachers to make their own graphic organizers. It took teachers about 60 minutes to prepare one organizer for a 1,500-word passage. Horton et al. (1990) suggested that teachers who teach the same content area classes collaborate or share graphic organizers, making the procedure more efficient.

The second limitation was the dependent measure used -- a graphic organizer that matched what students in the graphic organizer groups studied before taking

the test. Students filled in the dependent measure from memory. The graphic organizer dependent measure was selected to maximize students' retrieval of information by matching as closely as possible the form in which the information was taught. However, this study did not indicate whether instruction using graphic organizers would facilitate reading comprehension measured using more traditional measures (e.g., multiple choice, free response, oral response). While stronger suppórt for graphic organizer instruction requires replication of Horton et al.'s study using more traditional measures, a study by Bergerud, Lovitt, and Horton (cited in Horton et al., 1990) provided evidence that graphic organizer instruction in science transferred to written assessments.

In summary, instruction in some type of visual representation of text facilitates comprehension for students with differing abilities. Many models exist for effectively teaching students how to impose structure on text. Further study is needed to determine which models are more efficient for a wide range of abilities in a classroom.

Strategies. A major contribution of research has been to transform reading skills (e.g., summarize, identify main ideas, identify relations between main ideas) into explicit strategies that students can be taught directly (Seidenberg, 1989). This includes teaching students how to use (a) the physical presentation of text (e.g., location of topic sentences, headings, subheadings, signal words) as a strategy to identify main ideas and form interrelations between concepts, main ideas, and supporting details (Seidenberg, 1989); (b) a story grammar to identify the important ideas in narrative text (Gurney et al., 1990; Newby et al., 1989); and (c) expository text structures to identify concepts and interrelations or to impose interrelations upon poorly written text. Examples of imposing text structure include visual representations of text (Horton et al., 1990; Pearson & Fielding, 1991) and note sheets organized around text structure (Englert & Thomas, 1987). Strategy instruction holds

particular promise for students with LD as they seem to lack the ability to engage in strategic activities and do not spontaneously access and use cognitive strategies when these are needed (Seidenberg, 1989).

Strategies to identify the main idea in text appear particularly important. Because the ability to comprehend main ideas differentiates good and poor readers and seems directly related to general comprehension abilities, Seidenberg (1989) emphasized teaching students strategies to identify main ideas using topic sentences, and headings and subheadings. She noted, however, that main idea statements are often omitted from texts and that students demonstrated difficulties in using or comprehending text (e.g., summarizing, integrating important information) when there was no explicit main idea. When main idea statements are not explicitly stated or located in the beginning of the paragraph, students with LD who have not learned to generate main idea statements are unable to use a main idea strategy to derive or recall information from content area textbooks. Consequently, Seidenberg concluded that students with LD require instruction in how to invent main idea statements.

How to Teach

The secondary and primary studies reviewed for this synthesis provided strong support for explicit and direct instruction in text presentation and text structure. In addition, Seidenberg (1989) argued for explicit instruction in how to recognize or produce different text structure types. Pearson and Fielding (1991) cited studies that used either a model-lead-test or model-guided practice-independent practice format. This discussion of how to teach is brief. Relevant details and examples are presented by Dickson, Simmons, and Kameenui (1995) in a review of text organization and instructional implications.

Generally, instructional planning began with targeting the skills to be taught (Seidenberg, 1989) and subsequently developing lessons to teach the components of

the skill or strategy. Instruction in the primary and secondary studies followed a general pattern of (a) explaining the skill or component of text structure; (b) telling the importance; (c) modeling how, when, and where to use the skill, and how to evaluate the effectiveness of the skill; (d) providing guided and independent practice; (e) teaching for transfer; and (f) evaluating. Seidenberg (1989) suggested including activities in which students actively participate in the learning process and apply and generalize the given skill.

Additionally, the studies reviewed provided evidence for the effectiveness of sequencing instruction from less to more complex text structures, models, and tasks. Examples and details for sequencing instruction are presented in a review of text organization and instructional implications (Dickson, Simmons, & Kameenui, 1995), in a discussion of mediated scaffolding.

Caveats for Instruction

Englert and Thomas (1987) cautioned that intervention studies are essential to determine whether development of text structure knowledge results in long-lasting improvements in comprehension. While not pertaining to text structure per se, another caveat comes from the results of a review by Talbott et al. (in press), which was specifically directed at reading comprehension interventions for students with LD. These authors reviewed 48 studies examining the effects of interventions designed to improve the comprehension of students identified with LD and that included a control group. Because few studies reported details about students (e.g., ethnicity, gender, socioeconomic status), Talbott et al. (in press) concluded that generalization of results are limited. "We don't know whether reading comprehension interventions are effective for diverse groups of learners; for girls and boys, or for students with diverse ethnic and economic backgrounds, and at all economic levels" (p. 26). Though researchers have developed effective methods to

teach reading comprehension to students with LD, much research remains to be done.

First, various interventions need to be compared with each other to discern the "best" (p. 27) among them. In their review, Talbott et al. found no significant differences among reading comprehension studies that employed six major types of interventions: (a) cognitive, (b) cognitive-behavioral, (c) vocabulary, (d) pre- and mid-reading, (e) direct instruction, and (f) computer-assisted. Second, studies need to employ rigorous methods (e.g., random assignment, detailed subject description). Third, more teachers rather than researchers, need to conduct the actual interventions. Finally, researchers need to develop techniques to enable students to reach high levels of comprehension. Studies also need to address effects of intervention on students' higher order reading comprehension skills. In the majority of studies, researchers assessed recall of factual information from text rather than higher order skills (e.g., inferential, evaluative, and appreciative).

Relations Between Instruction in Text Organization and Types of Learners

Normally achieving learners. It appears that normally achieving students benefit from explicit, direct instruction in text structure. Much of the research in text structure instruction used a model-lead-test or model-guided practice-independent practice format for normally achieving students (Pearson & Fielding, 1991). Almost any instruction in expository text structure resulted in improved comprehension, as well as short- and long-term memory (Pearson & Fielding, 1991) for normally achieving learners.

Transfer of skills from materials in which instruction occurred to new materials is an important consideration in instruction. Instruction in narrative text structure transferred to improved comprehension of story grammar elements in "actual," unadapted stories not used in the intervention (Pearson & Fielding, 1991).

The results of research in graphic organizers for normally achieving students are equivocal. Some studies demonstrated benefit for low-, but not high-performing students (Pearson & Fielding, 1991); others supported benefit for both high and low performers (e.g., Horton et al., 1990).

Diverse learners. Diverse learners have benefited from explicit, task-specific instruction on how to recognize and use the physical structure (e.g., topic sentences, headings, signal words) (Seidenberg, 1989), as well as narrative (Gurney et al., 1990; Newby et al., 1989) and expository text structures (Seidenberg, 1989). Instruction in narrative text structure appeared to provide students with a framework for recalling the important ideas in stories, but not the details. Therefore, students with LD may require instructional focus on the goals, motives, thoughts, and feelings of characters in stories (Montague et al., 1991).

Diverse learners may benefit from instruction in strategies, and when and how to apply them (Seidenberg, 1989). In particular, instruction in strategies for identifying main ideas may be useful for these learners.

For students with dyslexia, studies have examined whether to teach using their strengths or remediating their weaknesses (Newby et al., 1989). Newby et al. (1989) examined teaching story grammar to five 8- to 10-year-old students using instruction based on their strengths. Two students were identified as having difficulties with the sequential phonetic processes of written text (i.e., dysphonetic or auditory-linguistic dyslexia). Three students were identified as having difficulties processing words as wholes (i.e., dyseidetic or visual-spatial dyslexia).

The students displaying sequential phonetic difficulties were taught story grammar components using pictographs with no regard for sequential order. The students drew or briefly noted story components on index cards. The three students who were identified as having difficulties with processing words as wholes were taught story grammar components using sequentially based instruction. They were

taught to identify first the main character, then the setting, continuing through the story grammar components in a prescribed manner. Instruction resulted in recall of a greater percentage of important ideas than in baseline. One of the two dysphonetic students and all of the three dyseidetic students showed clear increases. While this study pointed to the effectiveness of intervention by subtype, more research is required to draw clear conclusions. Newby et al. (1989) suggested that the study did not provide enough information to indicate if instruction based on the strengths of dyslexic subtypes was effective, or if training in story grammar in general was just as effective.

Summary

This review of the literature examining the relation between text organization and comprehension resulted in three areas of convergence:

- Well-presented physical text facilitates reading comprehension.
- Text structure and student awareness of text structure are highly related to reading comprehension.
- Explicit instruction in the physical presentation of text and/or text structure facilitates reading comprehension.

The first two areas are three-pronged, involving (a) presentation and structure of text, (b) students' awareness of text presentation and structure, and (c) students' strategic use of text presentation and structure. Text presentation facilitates reading comprehension if (a) main ideas are clearly stated and located at the beginnings of paragraphs; and (b) the relations between important information are clearly indicated by headings, subheadings, signal words, and sentences or paragraphs signaling text organization placed at the beginning of the passage. Extra spacing between thought units in sentences facilitates attention to ideas within sentences. Text structure facilitates reading comprehension, with narrative text structure being generally easier for students to recall and monitor than expository text structures.

However, it may be that simply presenting text in a clear, well-organized manner is not sufficient. Research suggests that students' awareness of that presentation and strategic use of text are also needed to enable students to identify relevant and nonrelevant information, main ideas, and relations between ideas. Normally achieving students appear to strategically use text organization to identify main ideas and relations between ideas. However, if main ideas are not clearly stated, even normally achieving students have demonstrated difficulty identifying important information, summarizing, and integrating information.

Unlike normally achieving students, diverse learners appear less aware of text organization and its use as a strategy. Many comprehension difficulties of diverse learners have been attributed to their deficits in text structure awareness. For example, they have demonstrated difficulty identifying main ideas, and discriminating between relevant and nonrelevant information. While demonstrating a knowledge of strategies, they fail to demonstrate a use of strategies.

The first two convergent areas and the importance of students' awareness and strategic use of text presentation lead to the third convergent area -- explicit instruction in text organization facilitates comprehension. Research supports instruction in the physical presentation of text, text structures, and strategic use of text organization to benefit reading comprehension. Research evidence also supports explicit instruction that follows a general pattern of (a) explaining the skill or component of text structure; (b) telling the importance; (c) modeling how, when, and where to use the skill, and how to evaluate the effectiveness of the skill; (d) providing guided and independent practice; (e) teaching for transfer; and (f) evaluating.

The effect on reading comprehension of the presentation and structure of text is more global than local. Well-presented and structured text results in better comprehension of main ideas and relations between ideas than poorly presented or

structured text. Likewise, students who are aware of or have had instruction in the physical presentation of text or text structure demonstrate more global comprehension than students who lack awareness or have not had instruction. Although students who are aware of text structure recall more than students who are not aware of text structure, there is often no difference between these students for local (i.e., details) comprehension.

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Figure Captions

Figure 1. Secondary and primary sources for a synthesis of the research on text organization and its relation to reading comprehension.

Figure 2. Overview of a synthesis of the research on text organization and its relation to reading comprehension.

Figure 3. Text organization includes physical presentation and text structures.

Secondary Sources

Authors	Text Organization	Participants	Purpose
Graesser, Golding, & Long, 1991	Narrative	Types of readers were not described	Review definitions of narrative text and theories of narrative representation and comprehension
Kinder & Bursuck, 1991	Expository (social studies)	Described one study; students with behavior disorders, LD, mild mental retardation; three junior high classrooms, 4 - 10 students each	Review social studies textbooks and instruction; propose an instructional approach for students with learning disabilities
Pearson & Fielding, 1991	Narrative & expository	High-ability, good readers, poor readers, heterogeneous groups including low achievers and students with LD; kindergarten, elementary, intermediate, junior high, high school, adults	Review of studies to improve reading comprehension
Scruggs & Mastropieri, 1993	Expository (science instruction)	Students with disabilities including language and literacy areas, mental retardation, behavior disorders, LD, hearing or visual impairments, etc.	Review content- vs. activities-based science instruction

Secondary Sources Continued

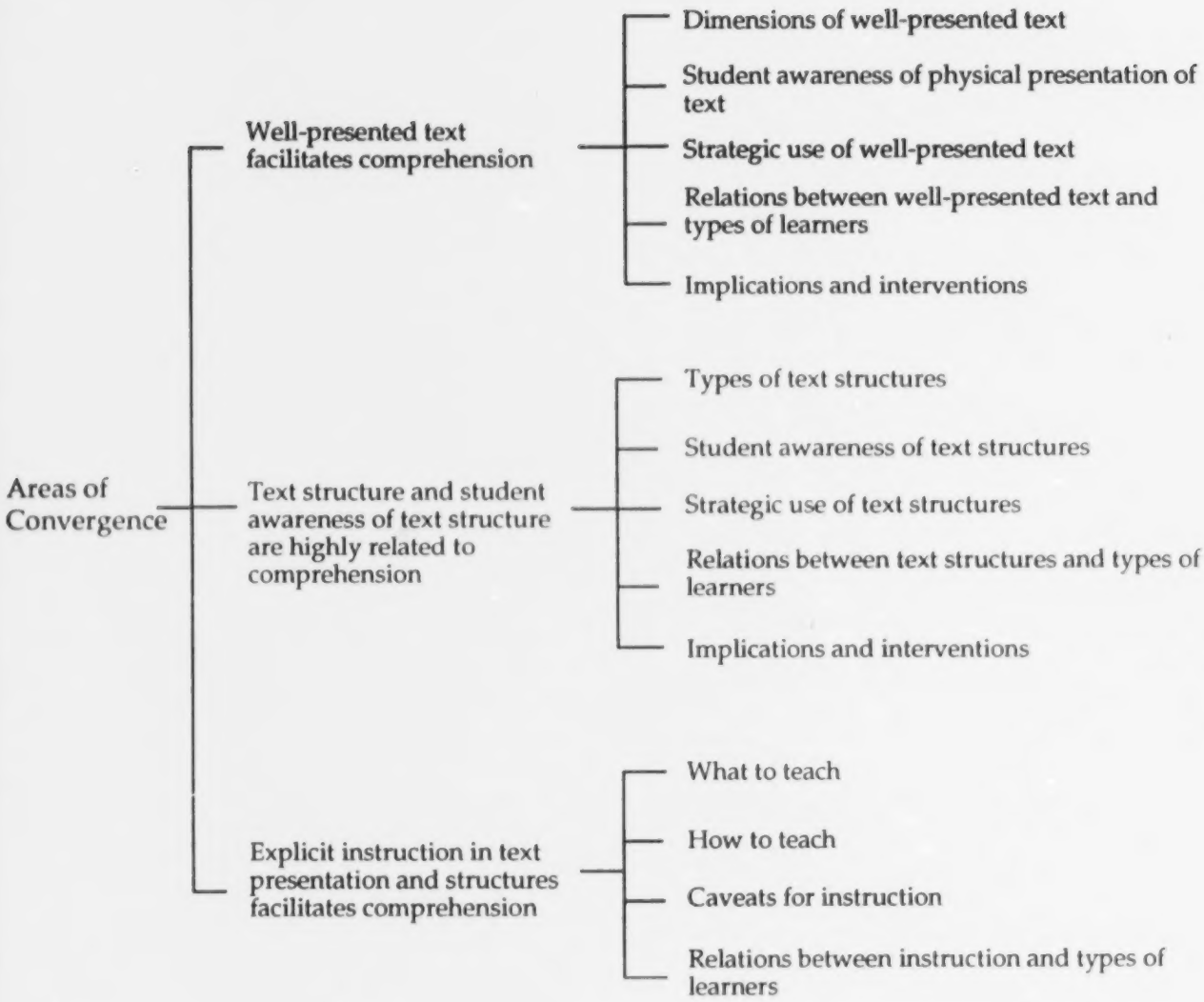
Authors	Text Organization	Participants	Purpose
Seidenberg, 1989	Physical presentation & expository	Students with LD	Review text-processing literature and propose instructional approaches for students with learning disabilities
Talbott, Lloyd, & Tankersley, in press		Students with LD; 48 studies	Review comprehension interventions
Weaver & Kintsch, 1991	Expository	Types of readers were not described	Review models and studies of expository text comprehension

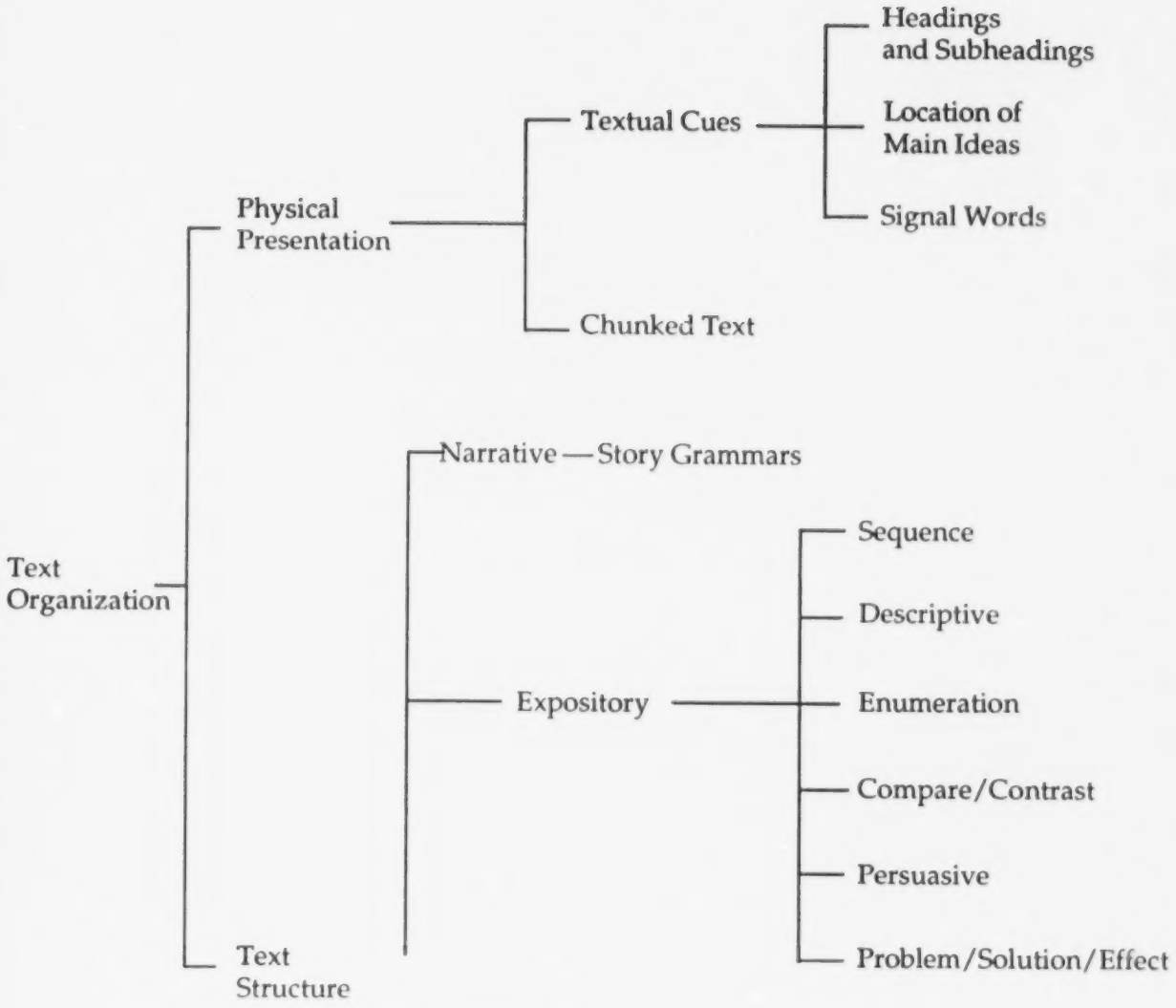
Primary Sources

Authors	Text Organization	Participants	Purpose
Casteel, 1990	Physical, "chunks"	Grade 8; 25 high & 25 low readers	Intervention; compared chunked and traditional text and ability level; matched-pairs group design
Englert & Thomas, 1987	Expository	Grades 3 & 4; grades 6 & 7; 18 LD, 18 low achievers, 18 normal achievers in each	Descriptive; compared text structure knowledge of description, enumeration, sequence, and comparison/contrast for young and old readers; group design

Primary Sources Continued

Authors	Text Organization	Participants	Purpose
Gurney, Gersten, Dimino, & Carnine, 1990	Narrative	High school, LD; n = 7	Intervention; traditional instruction followed by story grammar instruction; modified multiple baseline
Horton, Lovitt, & Bergerud, 1990	Graphic organizers	Study 1 & 2: Grade 7; 127 general ed, 0 remedial, 5 LD; grade 10; 36 general, 9 remedial, 3 LD; Study 3: Grade 7; 151 general, 0 remedial, 3 LD; grade 10; 175 general, 9 remedial, 1 LD	Intervention; compared graphic organizers and self-study; group design
Montague, Maddux, & Dereshiwsky, 1990	Narrative	Grades 4 & 5, 7 & 8; & high school; 12 with LD and 12 without LD in each combination	Descriptive; compared learner type for quantitative and qualitative differences in narrative; group design
Newby, Caldwell, & Recht, 1989	Narrative	Ages 8-10; two types of dyslexia; n = 5	Intervention; examined instruction based on learning strength; multiple baseline
Zabrucky & Ratner, 1992	Narrative & expository	Grade 6; poor & good comprehenders; n = 16 each	Descriptive; compared evaluation and regulation skills for good and poor readers using narrative and expository text; group design


Areas of Convergence
Well-presented text facilitates comprehension
Dimensions of well-presented text
Student awareness of physical presentation of text
Strategic use of well-presented text
Relations between well-presented text and types of learners
Implications and interventions
Text structure and student awareness of text structure are highly related to comprehension
Types of text structures
Student awareness of text structures
Strategic use of text structures
Relations between text structures and types of learners
Implications and interventions
Explicit instruction in text presentation and structures facilitates comprehension
What to teach
How to teach
Caveats for instruction
Relations between instruction and types of learners


Text Organization
Physical Presentation
Textual Cues
Headings and Subheadings
Location of Main Ideas
Signal Words
Chunked Text
Text Structure
Narrative — Story Grammars
Expository
Sequence
Descriptive
Enumeration
Compare/Contrast
Persuasive
Problem/Solution/Effect